Colchester
VERMONT

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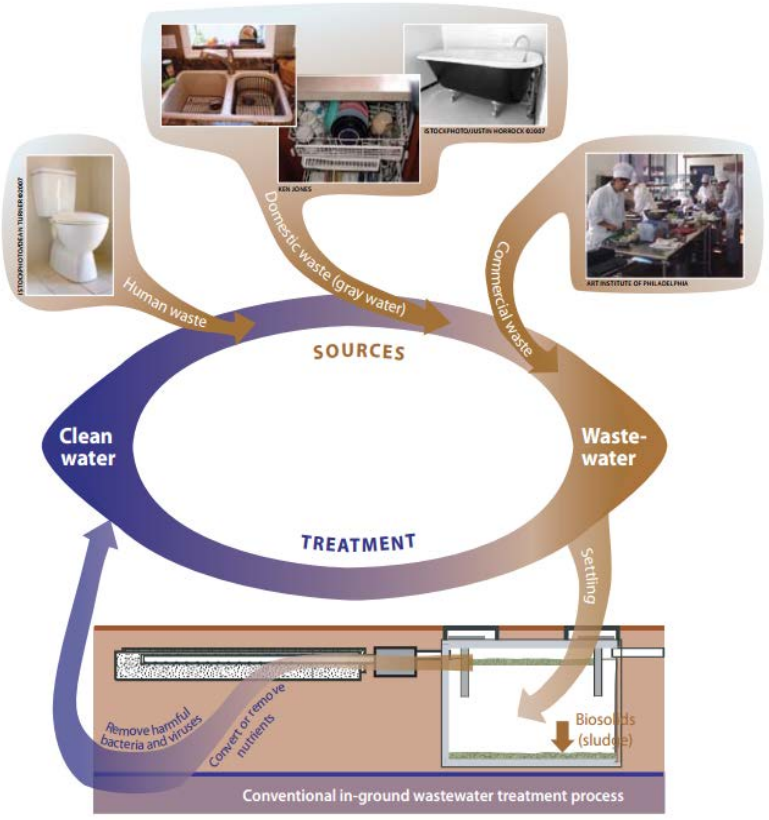
Wastewater FAQs

What is wastewater?
The U.S. Geologic Survey offers the definition that wastewater is used water that "includes substances such as human waste, food scraps, oils, soaps and chemicals. In homes, this includes water from sinks, showers, bathtubs, toilets, washing machines and dishwashers. Businesses and industries also contribute their share of used water that must be cleaned." Wastewater is also called septic, sewage, effluent, black water or grey water. All black water, or toilet water, and grey water, water usually from sinks, must be treated the same in the State of Vermont.



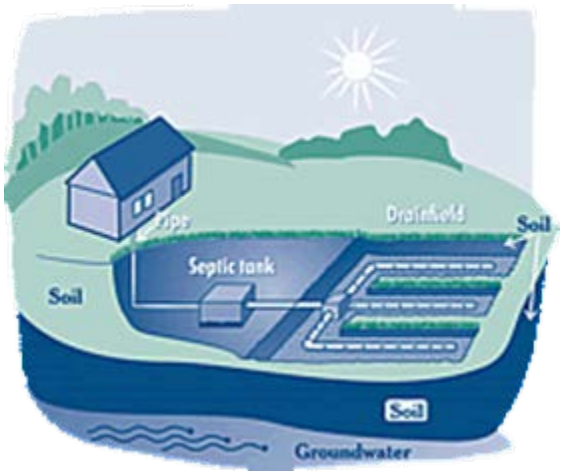
Graphics courtesy of VT ACCD & DEC

What happens to wastewater?
Per current regulations, all wastewater must be treated either as septate or sewage. Either septic systems, also referred to as decentralized onsite wastewater systems, or sewer systems that have a treatment plant or other community system must be used to treat wastewater.

What is a septic system?
Septic systems are wastewater treatment systems that collect, treat, and disperse wastewater generated by a home or business. The wastewater is treated and discharged to the soils rather than collected and transported to a wastewater treatment plant. The typical septic system consists of a septic tank and some kind of leachfield to disperse the wastewater into the ground.

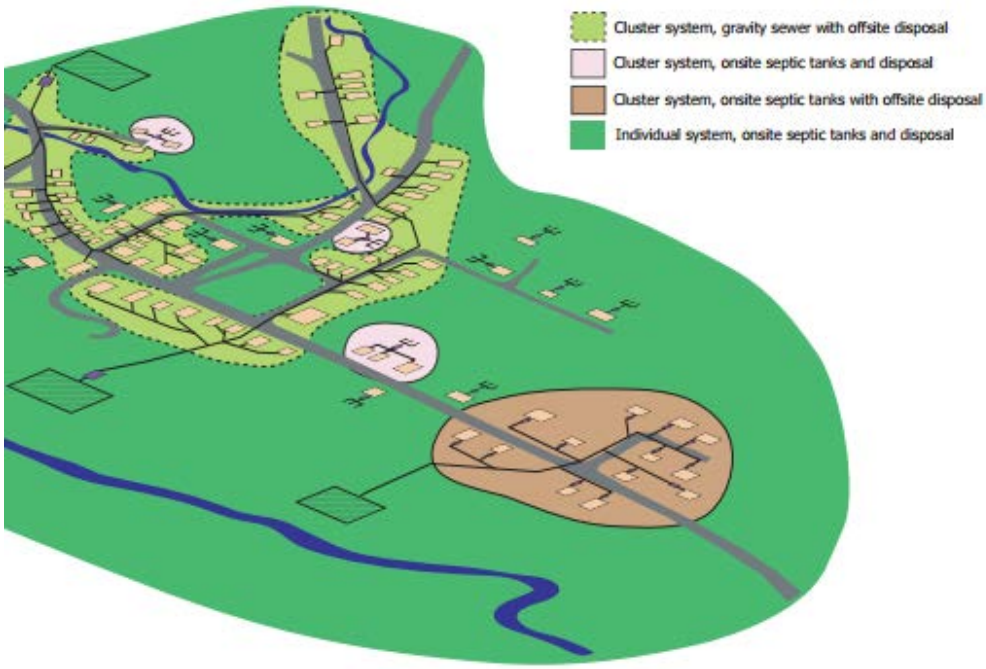
The first point of treatment of a septic system is the SEPTIC TANK that is a buried, watertight container usually made of concrete, fiberglass or polyethylene. Its job is to

hold the wastewater long enough for solids to settle to the bottom (forming sludge) and for the oil and grease to float to the top (as scum). The tank should have an EFFLUENT FILTER at the outlet to keep solids from leaving the tank and clogging the leachfield. Many systems include a DISTRIBUTION BOX that splits the flows from the septic tank into multiple leach lines in the dispersal system.



The dispersal system or LEACHFIELD can be completely below the natural grade and consist of an absorption bed or trenches, be placed at-grade, or be a mound. Further treatment of the wastewater occurs as it flows into and through the soils.

If the leachfield is uphill of the septic tank, or if an at-grade or mound system is constructed, there typically will be a PUMP TANK to dose or pressurize the dispersal system. There may be an advanced treatment system included with your system. They are called Innovative / Alternative systems (I/A) and typically follow or replace the septic tank. These systems can treat the wastewater that allows for a smaller leachfield and reduced separations to groundwater tables and bedrock.



What is a sewer system?

A sewer system is a collection system serving multiple properties. Treatment options can range from a shared community onsite system for a few homes to a central plant that treats a whole town and discharges to a water body. Community systems larger than 6,500 gallons per day are, for permitting, treated much like a central plant with requirements for tertiary treatment that removes phosphorus and other nutrients from wastewater.

How does wastewater get treated in Colchester?
Colchester does not have a municipally owned sewer treatment plant. Some sewer is available in limited locations in Colchester for which the Town of Colchester contracts with either the City of South Burlington or Winooski. The majority of wastewater in Colchester is treated by onsite systems. There are over 5,300 onsite wastewater systems in Colchester.

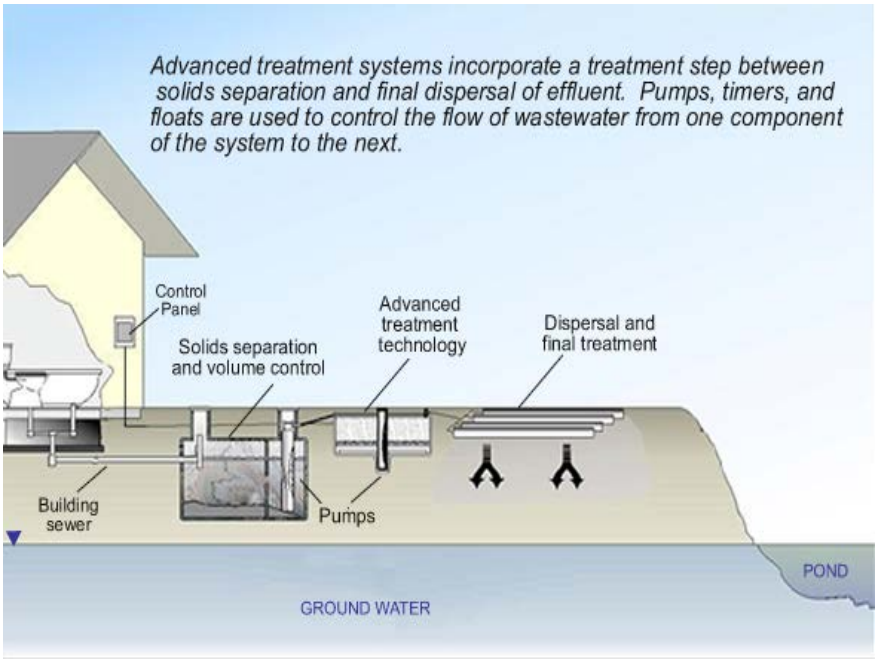
How is onsite wastewater treatment designed and regulated?
All wastewater treatment systems or modifications to systems require a State Wastewater Permit. The Town of Colchester is delegated to act as the State to receive, process and issue State Wastewater Permits. To obtain a permit, the system has to be designed by a Professional Engineer or Certified Site Technician to meet current State Regulations for a variety of things from separation from season high ground water, to setbacks from water supplies such as wells, to being correctly sized to handle the amount of wastewater flow anticipated. For residences, flows are calculated based upon how many bedrooms there are while commercial properties can use a variety of factors from number of employees to the number of seats in restaurants.

Once an onsite system is built, how long will it work?
A system designed and built to meet State regulations with proper maintenance can last approximately twenty years.

What is proper maintenance?
All of the components of a septic system should be maintained on a regular basis. Septic tanks should be checked and pumped when the solids or scum reach a certain volume of the tank. Septic tank effluent filters should be checked and cleaned on a regular basis (either once or twice a year for most households and filters). Distribution boxes should be checked and adjusted to maintain equal distribution. Pump tanks should be checked for solids build-up and control panel operation (including checking the alarm). Innovative / Alternative (I/A) systems typically require that a Maintenance Contract be in place between the homeowner and service provider. For most systems the State does not require maintenance be performed.

Are systems allowed to be built that do not meet State regulations?
Yes. If a property has a pre-existing use of the site and there is a failure of the on-site system, a replacement system does not need to fully meet State regulations. Exceptions can be made and the replacement system can be a "best fix" using variances from regulations. This means that a system may not meet setbacks to property lines, water bodies, ground water, or water supplies among other usual requirements. Best fixes can also include innovative or alternative systems. While increases to flows with "best fixes" are not allowed, all uses can continue using this method.

What is an Innovative / Alternative System?
I/A systems are used to: assist in overcoming site limitations that would otherwise not allow for the construction of a wastewater system on the property, to reduce the wastewater strength prior to disposal, or to decrease the size of a wastewater system. I/A Systems are more costly and complicated than traditional in-ground systems and may have alarms, filters, pumps, blowers, spray heads, nozzles, floats, tanks, or media. Periodic cleaning, inspection, replacement of components and adjustment keeps the system running properly. Ongoing maintenance is required by the State to identify problems that can be fixed before they impact the leachfield. Once damage occurs, repairing or replacing the leachfield or treatment unit can cost thousands to tens of thousands of dollars.

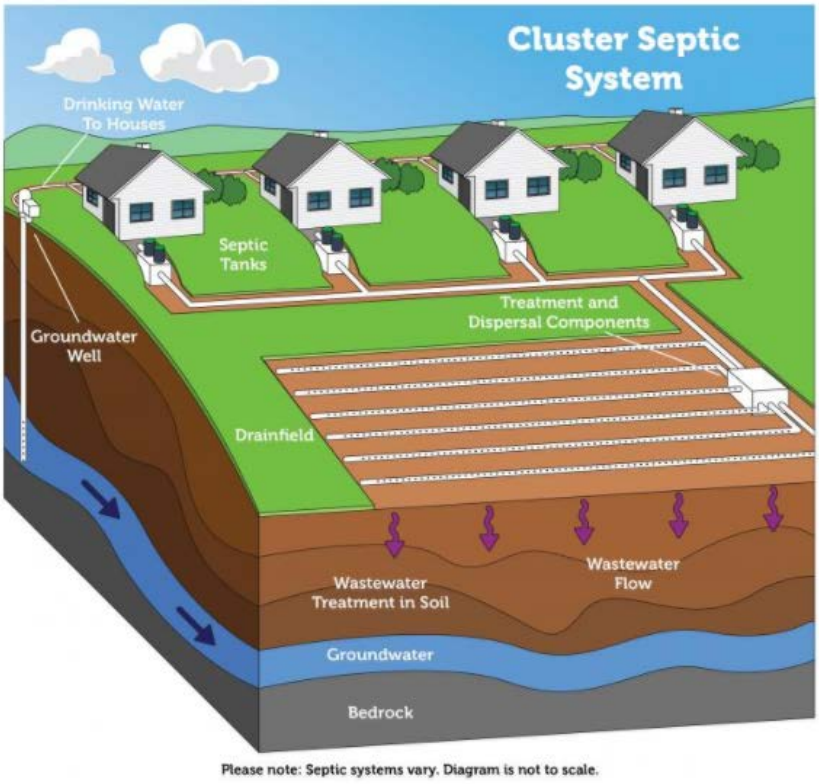


Courtesy of the University of Rhode Island

Are composting toilets or holding tanks allowed?
All properties must provide wastewater treatment. If a composting toilet is installed, the required flows to be treated by a system can be reduced slightly but a leachfield must still be built. Holding tanks are only allowed as a best fix.

What is the cost of a traditional on-site system versus an I/A system?
A traditional on-site system may cost between $10,000 and $20,000 while mounds, best-fits and other solutions may exceed $20,000. I/A systems can range between $30,000 and $40,000.

What is a community system?
Community systems serve more than one property with on-site wastewater. These systems are generally permitted the same as a regular on-site wastewater system unless they exceed 6,500 gallons per day. Usually residences produce between 210 and 490 gallons per day. Once a community system exceeds 6,500 gallons per day it must be permitted as an indirect discharge by the State. These systems are required to have much the same treatment as a typical sewage treatment plant with frequent inspections and certifications.



Courtesy of US EPA

Do all on-site systems fail?
Yes. Even a properly designed, constructed, and maintained system will fail eventually due to age and deterioration.

What happens when a system fails?
The State of Vermont defines failure as either a backup into the structure or visible surfacing of wastewater. Some signs of failure include: wastewater backing up into household drains; spongy areas on the leachfield; or a strong odor around the septic tank and leachfield. A residence or business can continue to occupy a structure and function

with a failed wastewater system as long as the system is regularly pumped and there is a plan under development to fix the system.

Can a property owner be fined or evicted due to a failure?
As all on-site systems are expected to eventually fail, the answer is no. A Town Health Officer will request the property owner put lime down on the lawn and fence the contaminated area as well as go on a pump out routine until the system can be replaced or fixed. A person can not be evicted or a business shut down for a failure. If remedial action is not taken a Town Board of Health (usually the Selectboard) may issue a health order to fix the property or incur fines. Continued non-compliance and worsening conditions may lead to a condemnation if the property is considered a public health hazard. The condemnation can be fixed usually by pumping then replacing the system.

If a property owner can not be fined or penalized for a failure, is a wastewater failure a problem?
When an onsite wastewater system fails, it's not just the homeowner who is affected. Improperly treated wastewater contains bacteria, viruses and other pollutants. A failed system can result in untreated wastewater: surfacing, leaching into groundwater that we drink, or it can run off into surface waters. This is a health hazard for the general public and is especially dangerous for children and the elderly and anyone with a compromised immune system. Poorly functioning systems can leach nutrients and pathogens into water bodies and adjacent properties without being a certified failed system.

What steps can be taken to identify and fix failures?
A Town Health Officer or State Official can not come onto a private property without invitation or just cause. Individual homes may not be inspected or tested unless there are signs of failure such as surfacing effluent.

What happens if a property owner is aware but still does not fix the problem?
A property owner would be fined and court action would be pursued. Unfortunately court cases can last months without clear resolution. Bringing the case before the court

costs the Town or State attorney fees and court fees. The property owner is not obligated to pay enforcement costs usually and fines can sometimes be less than the cost to replace a system. Current consequences and time to address violations do not adequately deter violations.

Couldn't repeat violations be condemned or taken by the Town or State? The fifth and fourteenth amendments to the U.S. Constitution do not allow for takings of properties without just compensation (having to give a property owner the value of the land and building) and due process (court process can be lengthy). Properties condemned due to wastewater failures can be reopened once the system is fixed. A fix can always be found for an existing use under the State's best fix solutions even if the resulting system only provides marginal wastewater treatment.

What is the history of wastewater regulation in Colchester?

- **1967 -** The Town of Colchester began issuing wastewater permits for any property development using the US EPA Publication entitled Manual of Septic-Tank Practice published in January 1967. The manual provided guidelines and design standards for septic tanks and absorption systems for residential, institutional, recreational and other establishments.
- **1969 –** The Vermont Health Department started issuing wastewater permits for public buildings only. They used the same Manual of Septic-Tank Practice that Colchester used.
- **1982 –** The Vermont Department of Environmental Conservation (VTDEC) takes responsibility for issuing wastewater permits from the Department of Health. Single family residences are added to those properties that require a wastewater permit, but properties located on 10 acres or more were exempt. This was known as the "10 acre loophole".
- **1996 –** Vermont adopted the Environmental Protection Rules that replaced the Manual of Septic-Tank Practice as the technical regulation for design and

permitting of wastewater systems. These technical standards were more "science based" and did a better job of taking into account the type of soils, depth to groundwater, depth to bedrock and other factors, specific to Vermont's geography and environment.

- **1999 –** Colchester adopted the 1996 Environmental Protection Rules as the technical standard for design and permitting of wastewater systems (to replace the Manual of Septic-Tank Practices) and incorporated revisions as adopted in 2002.
- **2002 –** The Environmental Protection Rules were revised to include Innovative/Alternative (I/A) technologies and performance-based system design. The "10 acre loophole" was also eliminated.
- **2005 –** Colchester becomes a "delegated municipality" and takes over responsibility for issuing wastewater permits in Colchester on behalf of VTDEC.
- **2007 –** The Environmental Protection Rules were again revised and were established as the state-wide uniform technical standard for wastewater system design and permitting. These Rules superseded any rules that any community in Vermont had in-place at the time. The adoption of these Rules also included a one-time "clean slate" where systems constructed prior to the adoption of these rules were exempt from permitting. Colchester did not accept "clean slate" and continued to enforce pervious permit requirements for systems constructed between 1967 and 2007.

Colchester wastewater by the numbers:

- Approx. 5,260 properties with on-site systems
- 1,170 (22%) have a state permit, meaning constructed or substantially altered in 2005 or later
- 2,810 (54%) have a town permit which suggests construction/substantial alteration between 1967 and 2005.
- 1,280 properties (24%) have no wastewater permit on file with the town or state, indicating activity taking place prior to 1967. There are 502 undeveloped parcels that indicate the remainder have unpermitted wastewater disposal methods.